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AND

FRIEND OF KNOWLEDGE:

A QUARTERLY JOURNAL OF
HISTORICAL AND NATURAL SCIENCES, USEFUL KNOWLEDGE, &c.
WITH FIGURES.

BY C. S. RAFINESQUE,

Professor of Historical and Natural Sciences, Member of many learned Societies in America and Europe, Author of many Works, &c. &c.

Knowledge is the mental food of man.

VOL. I. PHILADELPHIA, WINTER OF 1833. No. 8.

154. METEOROLOGY.

The Luminous Meteors of 1833.

By C. S. Rafinesque.

On the night of the 12 to 13 November, 1833, a wonderful display of meteors was visible all over N. America, which has excited the curiosity of the learned and unlearned, alarmed the superstitious, and baffled their inquiries.

Before any correct explanation is attempted, it would be needful to wait for the accounts from all parts of the world; this has prevented me from venturing to write on the subject in the newspapers.

We know already that it was visible from Canada to Jamaica and California; but attended with different circumstances, although simultaneous every where. It may have been visible also in Europe and in China, or at least, wherever it was night.

Shooting stars and flying stars, are a common phenomenon at night, particularly in volcanic countries; they are probably as common in the day time, but unseen. The meteors of November (which have again appeared partly in some nights of Nov. and Dec.) were not the same thing, being compared to a shower of fire-works, falling rockets, and luminous snakes; clouds, suns and streams of fire, diverging from a circle in the Atlantic Ocean towards the horizon all around on our Atlantic shores; and in California as directed towards the North.

It will be needful for whoever will attempt a rational explanation of this phenomenon, to have before him the accounts from all parts of the world, and to compare them carefully as to time, directions, and appearances. If unseen where it was daylight, it does not follow that the meteors did not exist there also, but they may have been hidden by the solar light.

It will be needful to ascertain

1. If the meteors were above the clouds or beneath them, if any reached the ground, where and how? Common shooting stars reach the ground in oblique phosphoric streams.

2. How high was the region where they started, or where some exploded? this may be ascertained by angles.

3. Was their light phosphoric, electrical or enflamed?

4. Did not their general motion move contrary to the earth's actual motion at the time?

5. Was the whole a sidereal or an atmospheric phenomenon? Did it begin out or at the contact of the atmosphere?

After this we must discuss what connection there may be between these meteors and the aurora borealis, 2d comets, 3 electricity, 4 the hydrogene of the atmosphere, 5 volcanic emanations, 6 ærolites and bolides, 7 other luminous meteors trabes, zodiacal lights, &c. 8 common flying stars, &c.

Therefore, correct scientific explanations will not be easy nor speedy. Whatever may be said or conjectured, without reference to these needful enquiries, will be mere conjecture and vain theories.

The following facts may be stated as ascertained already:

1. They were not similar to common flying stars.

2. They were seen at 4000 miles distance, N. and S., E. and W. or occupied that immense space.

3. Many meteors were commingled, some exploded with noise, others did not.

4. The general motion was radiating from a circle in the Atlantic Ocean.

5. No Aerolites fell or was seen to fall.

6. The aurora borealis appeared along with them on Lake Eric or towards the N. W.

7. They extended chiefly over the northern hemisphere of the earth.

8. They did not set fire to any thing, like thunder bolts and bolides.

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155. BOTANY.

Chronological Index of the principal Botanical Works and Discoveries published by C. S. Rafinesque.

Some botanical writers have been loath or prevented to render justice to my botanical labors and discoveries since 1802; they pretend that they do not know all my works; yet when they know them they often neglect them. Idleness or jealousy would be a better pretext. Some European botanists, and Decandolle, the first among them, have done me better justice.

I will give here a complete index of nearly all my publications on Botany, chiefly on N. American plants, in order of time, which settles the right to discoveries and improvements. They are mostly to be obtained from me, and are embodied in my *Amenities of Nature*, or

collection of my tracts and essays. My N. American botanical discoveries will also be recapitulated in my *Additional Flora of N. America.*

This index does not contain my works on Zoology and Animals, nor some few botanical tracts, of which I have been deprived by shipwreck.

Few botanists have so long cultivated and improved the science, since I began in N. America in 1802, and I find my zeal unabated after above 30 years of exertions. My labors will be duly appreciated in time, as those of Adanson of 1763 and Necker of 1790, so long neglected by systematic rivals, begin at last to be, after 70 years and 40 years delay!

1804. Floras of Delaware and District of Columbia, my first essay, suppressed by Dr. Benjamin Barton.

1804. Botanical letters to Muhlenberg, Brickell, &c.

1805. Discoveries in North America, Leghorn.

1807. Panphysis Sicula, Prodromus, Palermo, 4to. fig.

1808. N. Genera 10 and 60 N. Sp. of American plants in No. 44 of Medical Repository —re-printed in Desvaux' Journal of Botany, Paris, 1809, and in Archives of Discoveries. Observations on American Botany in ditto.—Icones Nov. Pantarum Americ. 40 pl.

1810. New animals and plants of Sicily, 1 vol. 4to. with 78 fig. Palermo.

Monograph of the G. Bertoloma.

1811. Naturalized plants of the United States, in No. 56 of Medical Repository.

1812. Monograph of the G. Callitriche. On the Tuber rufescens of Sicily. On some new plants and animals. Reform of some Genera. Pamphlets.

1814. Compendium of my zoological and botanical discoveries, 63 N. G. and 116 N. Sp. Pamphlet, Palermo. Principles of Nomenclature and classification, ditto. Panphyton Siculum of Cupani, selection of 125 plates in folio, Palermo.

Cyclopedical Journal of Sicily, 2 vols. 4to. with several botanical essays, 20 N. G. of exotic plants, 15 new Sicilian plants, 14 new spunges, 2 N. G. Cryptogams, &c.

1815. Analysis of Nature, with new orders and families, Palermo, 1 vol. 8vo.

Chloris Etnensis or 4 florulas of Etna, in the Natural History of Etna of Recupero, Catania.

Prodromus of New Genera. Pamphlet.

1817. Florula Ludoviciana, containing 30 N. G. and 169 N. Sp. 1 vol. 12mo. N. York.

Florula Missurica, Mandanensis and Oregonensis. Pamphlet.

Reviews of Pursh, Eaton, Barton, Bigelow, &c. in Am. Monthly Magazine, N. York.

Museum of Natural Sciences or N. animals and plants in ditto, 3 decads of New York plants, some Sicilian plants.

1818. Review of Nuttall and Elliott, in ditto.

Discoveries in the Western States in ditto.

1819. Remarks on American Genera of plants, 50 N. G. of American plants and 70 N. G. of animals. In the Journal of Physique, Paris.

New plants, spunges and animals in Silliman's Journal, New Haven.

1820. Annals of Nature or 25 N. G. and 124 N. Sp. of animals and plants. Pamphlet, Lexington.

Sketch of the Flora of Kentucky, and several Tracts, in Western Review, Lexington.

Monographs of the Genera Rosa, Houstonia, Eustachya, Lysimachia. N. G. Enemion. —Order of Rubiacea classed, and several other botanical tracts in ditto.

1821. Western Minerva, several N. G. &c. suppressed by my rivals!

1822. The Cosmonist, 20 numbers, Lexington.

New plants of Kentucky.

1823. Prenanthes opicrina and other plants, Cincinnatti.

1824. Florula Kentuckensis and Prodromus N. Sp. Lexington.

1825. Neogenyton or 66 N. G. North Am. plants, pamphlet, Lexington.

Neocloris or N. Sp. of Western America.

1826. School of Flora, with figures, Philadelphia.

1828. Medical Flora of the U. States, 1 vol. 50 plates, 12mo 2d vol. in 1830.

Neophyton Botanikon, or N. plants of N. America.

1830. American Vines—Botanical Letters to Decandolle.

1832. The American Florist 36 figs. 12mo. Philadelphia.

Atlantic Journal, Philada. 1832 and 1838, containing 150 N. G and Sp. of plants from Alleghonies, Florida, Illinois, Canada, Kentucky, &c.

1833. Herbarium Rafinesquianum or Prodromus of the new Sp. yet undescribed in his Herbal, 1 vol. Philada.

1815 to 1833. Autikon Botonikon or self figures of 2500 new or rare plants, chiefly collected in North America. Index to ditto, in three parts.

1833 to 1835. Additional Flora of North America, or the orders and families, Genera, Species and Varieties, omitted, misnamed or misplaced by Linneus, Wildenow, Persoon, Decandolle, Muhlenberg, Michaux, Lamark, Walter, Bosc, Adanson, Necker, Agardh, Lindley, Pursh, Nuttall, Elliott, Leconte, Marshall, Darlington, Torrey, Bigelow, Beck, Eaton, Hooker, Schweinitz, &c.

1808 to 1838. Amenities of Nature, or collection of the principal essays of C. S. Rafinesque on the Natural Sciences, &c.

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155. GEOGRAPHY.

Discovery of Enderby Land in the Austral Ocean.

It had long been suspected that large tracts of land existed near the South pole. In February, 1831, Capt. John Biscoe, of

the Brig Tula, belonging to Mess. Enderby of London, on a sealing voyage discovered under the Antarctic Circle a large extent of high-land, skirted by ice, which runs from N. E. to S, W. between Lat. 65 and 70 S. and between Long. 43 and 57 E. of Greenwich, to which he gave the name of Enderby land, and Cape Ann to a large cape on it. He could not come nearer than 20 miles of it, being prevented by a field of iee. Thus at last the Austral lands become gradually known.

In the same voyage Capt. Biscoe discovered a chain of Islands to the S. W. of the S. Shetlands, which he called Adelaide Islands. they are under the Antarctic Circle and near the west side of the great land of Gheritz, discovered in 1599, which has received so many names lately, South Greenland, South Spitsberg, Palmerland, &c. Capt. Biscoe deeming this west shore a discovery called it Graham land, it reaches as far as Lat. 68 due S. of cape Horn, running S. S. W.

This voyage of discovery has been deemed so important, altho' unprofitable to the owners, that they have sent again Capt. Biscoe to survey and explore these lands, and the admiralty has sent Capt. Rea to help him. The Society of Geography of London have also given their gold medal for 1832 to Capt. Biscoe as a reward.

156. GEOLOGY,

AND PHYSICAL FEATURES

Of the Atlantic plains of North America, by C. S. R.

They form great natural features of the physical geography and geology of North America, which have hardly been properly noticed as yet. The plains along the atlantic ocean, skirting the hilly primitive region, begin in New-Jersey in Lat. 41, and extend S. to Florida, thence W. to Texas, thence all around the gulph of Mexico to Yucatan, and even beyond to Veragua and Panama: forming thus a level litoral region nearly 4000 miles long, and from 100 to 150 miles wide on an average, the superficial Area exceeding 400,000 square miles! the whole of which is level, with the exception of a few scattered and insulated hills of small elevation.

A volume could be written on the geography, geology and natural history of this vast region: my limits compel me to give merely a recapitulation of the principal features and phenomena of it.

1. These immense plains rise only 50 feet above tide water on average, or from 25 to 75 feet.

2. The surface is hardly undulated, the streams have excavated broad and shallow valleys and beds, with wide estuaries at their mouths.

3. They may be divided into several tracts, 1. the Northern as far as the Chesapeak bay.

2 middle tract from Baltimore to cape Hatteras. 3 Southern to Florida. 4 Florida tract, or peninsula. 5 Alabamian plains to Delta of Mississipi. 6 Texas, beyond the Delta. 7 Mexican tract. 8 Yucatan. 9 Honduras. 10 Mosquitto shore. Each of these tracts has peculiar features of its own, which it would be too long to detail.

4. The whole of these plains are unhealthy, chiefly in the warm season, except the sections of it called Pine barrens, Limestone tracts, and the Sea Islands.

5. The population is scanty, short lived, and subject to many kinds of fevers. The whole population does not exceed 10 per square mile on an average, or four millions for the whole.

6. Few cities are found there, Charleston, Savannah, New-Orleans, Vera Cruz, Tabasco, &c. which are in it, are all proverbially unhealthy for half of the year.

7. There are few springs, the streams generally coming from the hills beyond, or rise in swamps and lakes.

8. Swamps, marshes, and shallow lakes are very common, the waters of which are often colored as well as those of the streams flowing from them.

9 Many swamps are peculiar and wooded, covered by *Cupressus thyoides* and *disticha*, *Magnolias*, *Nyssas* &c. called cedar or cypress swamps &c.

10 The Pine barrens are large dry sandy tracts, wooded by pines chiefly, thus healthier than the swamps.

11. The soil is either wet or sandy, always light and poor, unless improved by marl or manure. Cotton is the main produce of the dry soil, and rice of the damp soil.

12. Near the hills a diluvial soil is often met of a better quality, which has been washed thereon, and along the streams a deep and rich alluvial soil is often found.

13. There are tracts of pure sand or gravel, totally unfit for cultivation, that produce only bushes or dwarf trees.

14. Along the Sea shore are salt marshes, flooded by the tides, but gradually left dry, and reduced to meadows.

15. The sea recedes from the shore at the average rate of 3 to 5 feet in a century, and the whole region may have been under water two or three thousand years ago.

16. The scatterred hills are chiefly of sand stone, pebble stone, shell stone, marl stone, &c., with fossil remains. The highest only rise from 100 to 150 feet high.

17. Under the soil or sand are found small marly pits, with beds of clay, fossil shells, remains of fishes and reptiles. The hollow swamps appear to be the outlets that ejected these clays, and overwhelmed the animals.

18. A brown or black coarse sand is found beneath the clay, compared to the green sand of

Europe, but holding other fossils. Then come other stratas of clays.

19. Bog Iron and iron stones are found in many places, but hardly any other metal or mineral.

20. Mosquitoes, flies and noxious insects are common every where, and very annoying.

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157. *American Travels published in* 1833.

Several important original travels have been published this year in the United States, two of which by ladies! such as

1. Observations on Texas, by Mrs. Holley, 1 vol. 12 mo. Baltimore, map. Very clever little book, and the best account of that country, now become a State of the Mexican Confederation.

2. Narrative of a voyage to the Pacific Ocean, by Mrs. Morrell, the wife of Capt. Morrell, 1 vol. 12 mo. New York, with her portrait. A delightful little boook, written with feeling and graphic descriptions.

3. Travels and researches in Natolia, Armenia, Georgia and Persia, in 1830 and 1831, by the Rev. Eli Smith and H. Dwight. Boston, 2 vols. 12 mo. map. American missionaries sent to explore Armenia. Some useful and curious facts.

4. Sketches of Turkey, by Dr. Dekay, New York, 1 vol. 8 vo fig. Well written, and much information on Constantinople, although he was only a few months there. He praises the Turks more than the Greeks.

5. Voyage of Capt. Fanning round the world &c., 1 vol. 8 vo. New York, fig. Important, it embraces over thirty years of travels and discoveries by himself and others.

6. Travels in New Mexico and California, by Opattie Cincinnatti, vol. 12 mo. fig. Very interesting journal of a trapper and trader.

7. Account of an expedition to the Oregon or Rocky Mts. by Wyeth. Pamphlet, Boston. Trifling account.

VALEDICTORY.

As early as 1827 I proposed the publication of cheap Journals, weekly at one dollar per annum, daily at five dollars, and proved the possibility of these useful undertakings for the diffusion of knowledge. I was not believed then, as often happens with my useful projects, and no one would join me to begin the experiment.

In 1831 I issued proposals, and in 1832 began the publication of this Atlantic Journal on my individual means and exertions. If I had been sustained in my endeavours to blend scientific with popular knowledge, I would have furnished the cheapest periodical in the United States, twelve numbers yearly of nearly 400 pages & 24 figures for one dollar! But this required a greater number of subscribers than I was able to

procure without importunity, and more exactitude in paying their small yearly sum. Instead of this cheap publication I have been compelled to reduce it to the usual rate, giving only a volume of 212 pages and 12 figures for two dollars; and yet by the lack of punctuality in subscribers, extra expenses of postages, &c. I have been a loser by my endeavours to produce a useful work.

Under these circumstances I am admonished after two years of exertions and expences to conclude this small undertaking, and close the volume, furnishing a title page and index thereto. The whole however will be found to be an original work containing many new facts and views. But, as I never despair of ultimate success, and must always be useful and active, I propose to begin in 1834 another periodical under a more suitable plan.

Meantime I have had the pleasure to perceive that my former plan of dollar magazines and journals, nay even five dollar dailies, has been successfully introduced both in America and Europe since 1827. We have now a crowd of popular journals or weekly periodicals, at one dollar per annum or one penny by the number, and even one cent a piece in France! Such European journals have great circulation and combine science with utility. Here ours are paltry imitations, but suit the taste of readers by furnishing them vapid trash and copied fiction, instead of science, truth and original essays.

Whereas my Atlantic Journal was too learned for these readers and chiefly patronized by enlightened or learned men, I propose in my future works to write chiefly for them, and to imitate the English plan of making learning dear and exclusive, since the public will have it so: since they prefer paying 800 dollars for a splendid book on Birds to one dollar for a work of 400 pages containing as many facts and discoveries. Thus I offer for sale the illustration of 33 years travels and researches, by 3000 figures for $ 1000, an unique manuscript work. Also my *Antikon Botanikon* of 2500 plants, unique copy for $ 500.

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Published this year, The Herbarium Rafinesquianum, or New plants of my Herbal. Price One Dollar, but given gratis to those who subsbribed $ 2 for the Atlantic Journal.